

CLAIMS:

1. A method for preparing a rare earth permanent magnet material comprising the steps of:

5 disposing a powder comprising one or more members selected from an oxide of  $R^2$ , a fluoride of  $R^3$ , and an oxyfluoride of  $R^4$  wherein  $R^2$ ,  $R^3$  and  $R^4$  each are one or more elements selected from among rare earth elements inclusive of Y and Sc on a sintered magnet form of a  $R^1$ -Fe-B composition  
10 wherein  $R^1$  is one or more elements selected from among rare earth elements inclusive of Y and Sc, and

heat treating the magnet form and the powder at a temperature equal to or below the sintering temperature of the magnet in vacuum or in an inert gas.

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2. A method for preparing a rare earth permanent magnet material according to claim 1, wherein the sintered magnet form to be heat treated has a shape having a dimension of up to 100 mm along its maximum side and a dimension of up to 10  
20 mm in a magnetic anisotropy direction.

3. A method for preparing a rare earth permanent magnet material according to claim 2, wherein the sintered magnet form to be heat treated has a shape having a dimension of up  
25 to 20 mm along its maximum side and a dimension of up to 2 mm in a magnetic anisotropy direction.

4. A method for preparing a rare earth permanent magnet material according to claim 1, 2 or 3, wherein the powder  
30 comprising one or more members selected from an oxide of  $R^2$ , a fluoride of  $R^3$ , and an oxyfluoride of  $R^4$  is present in a magnet-surrounding space within a distance of 1 mm from the surface of the magnet form and at an average filling factor of at least 10%.

5. A method for preparing a rare earth permanent magnet material according to any one of claims 1 to 4, wherein the powder comprising one or more members selected from an oxide of  $R^2$ , a fluoride of  $R^3$ , and an oxyfluoride of  $R^4$  has an average particle size of up to 100  $\mu\text{m}$ .

6. A method for preparing a rare earth permanent magnet material according to any one of claims 1 to 5, wherein in said one or more members selected from an oxide of  $R^2$ , a fluoride of  $R^3$ , and an oxyfluoride of  $R^4$  wherein  $R^2$ ,  $R^3$  and  $R^4$  each are one or more elements selected from among rare earth elements inclusive of Y and Sc,  $R^2$ ,  $R^3$  or  $R^4$  contains at least 10 atom% of Dy and/or Tb.

7. A method for preparing a rare earth permanent magnet material according to any one of claims 1 to 6, wherein a powder comprising a fluoride of  $R^3$  and/or an oxyfluoride of  $R^4$  is used whereby fluorine is absorbed in the magnet form along with  $R^3$  and/or  $R^4$ .

8. A method for preparing a rare earth permanent magnet material according to claim 7, wherein in the powder comprising a fluoride of  $R^3$  and/or an oxyfluoride of  $R^4$ ,  $R^3$  and/or  $R^4$  contains at least 10 atom% of Dy and/or Tb, and the total concentration of Nd and Pr in  $R^3$  and/or  $R^4$  is lower than the total concentration of Nd and Pr in  $R^1$ .

9. A method for preparing a rare earth permanent magnet material according to claim 7 or 8, wherein in the powder comprising a fluoride of  $R^3$  and/or an oxyfluoride of  $R^4$ , the  $R^3$  fluoride and the  $R^4$  oxyfluoride are contained in a total amount of at least 10% by weight, with the balance being one or more members selected from among a carbide, nitride, oxide, hydroxide and hydride of  $R^5$  wherein  $R^5$  is one or more elements selected from among rare earth elements inclusive of Y and Sc.

10. A method for preparing a rare earth permanent magnet material according to any one of claims 1 to 9, further comprising, after the heat treatment, effecting aging treatment at lower than the temperature of the heat  
5 treatment.

11. A method for preparing a rare earth permanent magnet material according to any one of claims 1 to 10, wherein said powder comprising one or more members selected from an oxide  
10 of  $R^2$ , a fluoride of  $R^3$ , and an oxyfluoride of  $R^4$  wherein  $R^2$ ,  $R^3$  and  $R^4$  each are one or more elements selected from among rare earth elements inclusive of Y and Sc and having an average particle size of up to 100  $\mu\text{m}$  is disposed in the surface of the magnet form as a slurry thereof dispersed in  
15 an aqueous or organic solvent.

12. A method for preparing a rare earth permanent magnet material according to any one of claims 1 to 11, wherein the sintered magnet form is cleaned with at least one of alkalis,  
20 acids and organic solvents, disposing the powder on the surface of the magnet form, and then effecting the heat treatment.

13. A method for preparing a rare earth permanent magnet  
25 material according to any one of claims 1 to 11, wherein a surface layer of the sintered magnet form is removed by shot blasting, disposing the powder on the surface of the magnet form, and then effecting the heat treatment.

30 14. A method for preparing a rare earth permanent magnet material according to any one of claims 1 to 13, wherein cleaning with at least one of alkalis, acids and organic solvents, grinding, or plating or painting is carried out as a final treatment after the heat treatment.